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ABSTRACT

This study reports on the effect of a multimedia presentation upon student knowledge levels concerning physical education program offerings at a university no longer requiring participation in the program. The study sought to (a) develop an objective test to measure student knowledge about the University of North Carolina/Greensboro General Physical Education Program, (b) develop a physical education multimedia presentation designed to inform incoming freshmen about the program, and (c) determine the effect of the multimedia presentation on the program knowledge of incoming freshman students. (MJB)

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The Effect of a Multimedia Presentation Upon Knowledges About a College General Physical Education Program

Introduction

The elimination of the university requirement has given students full responsibility for determining their physical education experiences. Informing students about the general physical education program and the potential which the program has for contributing to their education must be assumed by physical educators (NASPE, 1975). Usually, adults are able to make more intelligent decisions regarding a subject when they are better informed.

Recently, the Physical Education Division of the School of Health, Physical Education, and Recreation at the University of North Carolina at Greensboro accepted a committee proposal to drop the current one year physical education requirement. If the proposal is accepted by the University, the General Physical Education Program will become totally elective. This investigation sought to: (a) develop an objective test to measure student knowledges about the UNC-G General Physical Education Program, (b) develop a physical education multimedia presentation designed to inform incoming freshmen about the program, and (c) determine the effect of the multimedia presentation on the program knowledges of incoming freshmen students.

Questions which this study specifically sought to answer were divided into two parts. The first part included the following questions which were concerned with the development of the knowledge test and the multimedia presentation:

1. What aspects of the UNC-G General Physical Education Program do the physical education faculty believe incoming freshmen students should know?

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2. Does the objective knowledge test have content validity?

3. Does the objective knowledge test include the same aspects as the multimedia presentation?

The second part included the following questions concerned with the effect of the multimedia presentation upon the program knowledges of incoming freshmen students:

4. Is there a difference in the knowledges about the UNC-G General Physical Education Program between incoming freshmen who have and have not viewed the multimedia presentation?

5. Is there a difference in the number of questions answered don't know by incoming freshmen who have and have not viewed the multimedia presentation?

6. Is there pretesting effect?

7. Is there an interaction of the media and testing conditions?

Procedures

The preliminary preparation included the following steps: (a) informal interviews with the UNC-G physical education faculty, (b) the development of a knowledge test, and (c) the development of a physical education multimedia presentation.

Interviews

Twelve members of the UNC-G physical education faculty were interviewed during the spring semester, 1977. During the interview, each faculty member was asked to describe the UNC-G General Physical Education Program and to include those features or aspects which they felt incoming freshmen should know and/or learn about the program. The results were used in the

development of the knowledge test and the multimedia presentation to insure that both included the same aspects.

Development of the Knowledge Test

A criterion-referenced mastery test consisting of 34 true/false items was constructed to measure student knowledges about the UNC-G General Physical Education Program. The following seven steps were followed in planning the test: (a) delimiting the area to be tested, (b) stating the objectives and defining them in specific terms, (c) making a content outline, (d) preparing a table of specifications, (e) setting standards of performance, (f) writing the test items, and (g) providing for test interpretation (Gronlund, 1973).

Content validity was established based upon the judgment of three selected UNC-G physical education faculty members. Statistical measures of variability need not occur in the scores of criterion-referenced mastery tests, such statistical measures are inappropriate. "Attemps are being made to develop new statistics for estimating the validity and reliability of criterion-referenced mastery tests, a satisfactory solution has not yet been achieved" (Gronlund, 1973, p. 49).

Development of the Physical Education Multimedia Presentation

The physical education multimedia presentation consisted of: (a) a slide/tape series, (b) a set of five activity booklets, and (c) an activity brochure. The development of the multimedia presentation was based upon information gained from the informal interviews of the UNC-G physical education faculty.

Slide/tape Series. The slide/tape series included 132 color slides

of students participating in activities which were currently offered or had been offered in the last two years in the UNC-G General Physical Education Program. A tape recorded narrative describing opportunities, policies, and regulations of the general physical education program completed the series. The slides were arranged in two slide projectors and a dissolve control unit was used to fade the image from one projector as the second projector came on. Inaudible cues were added to the tape to permit the slides to advance automatically. The purpose of the slide/tape series was to give students an overview of the UNC-G General Physical Education Program.

Activity Booklet. The purpose of the activity booklet was to give students specific information about activities offered in the program. Each activity booklet included black and white photographs of students participating in physical education activities, and a typed sheet listing: (a) prerequisites for each class, (b) equipment needed for each class, (c) special fees charged for each course, and (d) a content outline for each activity course. All booklets included an introductory sheet listing general information regarding academic and program regulations, and recreation, intramural, and intercollegiate opportunities available for UNC-G students. A minimum of two and a maximum of four booklet pages were used to display each physical education activity. The number of pages needed for each activity depended upon the amount of course content and the number of skill levels offered in the activity. There was an activity booklet for each of the following areas: (a) aquatic, (b) dance, (c) dual, (d) individual, and (e) outing and team activities.

Activity Brochure. The activity brochure contained general information about the UNC-G General Physical Education Program. Included in the brochure was (a) a list of choices within the program, (b) a list of activity courses, and (c) a list of benefits gained through physical education.

Selection of Subjects and Design for Data Collection

The subjects for this study were 240 incoming freshmen students who were enrolled in the UNC-G General Physical Education Program during the fall semester, 1977. A stratified sample of activity classes were selected in order to include a representative sample of aquatics, dance, dual, individual, outing, and team activities. Within each class, subjects were randomly assigned to all four treatment groups using the Solomon Four-Group Design (Campbell & Stanley, 1973). Sixty subjects comprised each group.

Group 1	R	O_1	X	O_2
Group 2	R	O_3		O_4
Group 3	R		X	O_5
Group 4				O_6

O = test
R = random assignment to groups
X = treatment administration

All data were collected by a trained test administrator on a carefully scheduled basis.

Administration of the Pretest

The first day that classes met during the 1977 fall semester, an administrator attended one of the selected activity classes. The administrator asked each subject to complete the color coded information sheet. Half of the subjects were assigned while the other half completed the knowledge test.

sheet. Half of the subjects were dismissed while the other half completed the knowledge test.

Administration of the Multimedia Presentation

The second day that the classes met, Groups 1 and 3 were shown the multimedia presentation. The seven minute automatic slide/tape series was shown first, followed by the activity booklets and the activity brochure.

Upon completion of the multimedia presentation, each subject was asked to complete the knowledge test.

Administration of the Posttest

Simultaneously while Groups 1 and 3 were viewing the multimedia presentation, Groups 2 and 4 were taken to a designated area and met by a test administrator. At this time, the subjects were asked to respond to the knowledge test.

After responding to the knowledge test, all four groups of subjects were given a debriefing sheet explaining the nature of the study in which they had participated. Finally, each subject was given the choice of signing a consent form to allow their scores to be used in the study.

Treatment of Data

The data was analyzed by a multivariate analysis of variance with two dependent variables using a balanced two way factorial design with fixed effects (Winer, 1971). Wilke's Criterion was used to evaluate the multivariate analysis of variance (Harris, 1975).

A two way crosstabulation of treatment and criterion score was performed using the SAS (Barr et al, 1976) procedure FREQ. The treatment condition was divided into two categories of subjects who did and did not

view the multimedia presentation. The criterion condition was divided into two categories of subjects who did and did not reach the criterion score of 29 on the knowledge test. The chi square statistic with Yates' correction was applied to the crosstabulation to determine if the conditions were independent.

Results

The results of the two multivariate anslyses of variance indicated the appropriateness to interpret the univariate ANOVA's for both dependent variables, the posttest knowledge score and the posttest don't know score. The multivariate analysis of variance of the media by testing interaction using Wilke's Criterion technique (Harris, 1975) was not significant at $p \leq .05$.

Univariate Analysis of Variance on Posttest Knowledge Scores

The between group differences utilizing the posttest Knowledge Test Scores indicated an F value of 210.14, significant at the .0001 level, was obtained for the Media groups. The utility index indicated that 46.08% of the total variability was accounted for by the Media condition.

Comparisons between groups revealed that the Media group, which yielded a mean of 29.092 and a standard deviation of 3.046, performed significantly better on the posttest knowledge test than the No Media group with a mean of 21.433 and a standard deviation of 4.093. The minimum value obtained on the knowledge posttest by the Media group was 18 while the minimum value obtained by the No Media group was 10. The maximum value obtained on the knowledge posttest by the Media group was 34 while the maximum value obtained by the No Media group was 29.

An F value of 7.91, which was significant at the .005 level, was

obtained for the Testing condition. The utility index indicated that only 1.52% of the total variability was accounted for by the Testing condition.

The Pretest group, which yielded a mean of 25.408 and a standard deviation of 4.664, performed significantly better on the knowledge posttest than the Posttest Only group with a mean of 24.117 and a standard deviation of 5.078. The minimum value obtained by the Pretest group was 12 while the minimum value obtained by the Posttest Only group was 10. The maximum value obtained on the knowledge posttest by the Pretest group was 34 while the maximum value obtained by the Posttest Only group was 33.

There was no significant interaction effect between the Media by Testing condition.

Univariate Analysis of Variance on Posttest Don't Know Scores

The between group differences utilizing the Posttest Don't Know Scores indicated an F value of 175.43, significant at the .0001 level, was obtained by the Media groups. The utility index indicated that 41.61% of the total variability was accounted for by the Media condition. Comparisons between groups revealed that the Media group, which yielded a mean of 3.292 and a standard deviation of 2.871, checked significantly less don't know answers than the No Media group. The minimum values obtained by both the Media and No Media groups were zero, however, the maximum value obtained by the Media group was 14 while the No Media group obtained a mazimum value of 23.

An F value of 8.26, which was significant at the .05 level, was obtained for the Testing groups. The utility index indicated that only

1.73% of the total variability was accounted for by the Testing condition. The Pretest group, which yielded a mean of 5.758 and a standard deviation of 4.561, checked significantly less don't know answers than the Posttest Only group. The minimum values obtained by both the Pretest and the Posttest Only groups were zero, however, the maximum value obtained by the Pretest group was 19 while the Posttest Only group obtained a maximum value of 23.

There was no significant interaction effect between the Media by Testing condition.

Crosstabulation of Treatment and Criterion Score

A criterion score of 29, 85% correct, was established. Examination of the crosstabulation revealed that of the subjects who failed to reach the criterion score, 66.67% did not view the multimedia presentation, while only 33.33% did view the presentation.

The chi square of 74.921 with one degree of freedom was significant at the .0001 level which showed that the conditions of treatment and criterion score were dependent. The results of the crosstabulation indicated that obtaining the criterion score depended upon viewing the multimedia presentation.

Summary

Development

The physical education faculty members placed major emphasis upon those aspects which dealt with general and specific facts regarding the UNC-G General Physical Education Program rather than aspects which dealt with academic and/or university regulations.

The objective knowledge test did have content validity as judged by

the three test judges.

The knowledge test and the multimedia presentation included the same aspects since they both were developed based upon the results from the faculty interviews.

Effectiveness

The effectiveness of the multimedia presentation was evident from the analysis of continuous and discrete data.

1. Subjects who viewed the presentation scored higher on the posttest knowledge test than subjects who did not view the presentation.

2. Subjects who viewed the multimedia presentation checked significantly less don't know answers than the No Media group.

3. The utility index indicated that over 40% of the total variability was accounted for by the Media condition.

4. The results of the crosstabulation indicated that obtaining the criterion score of 29 depended upon viewing the multimedia presentation.

There was a slight pretesting effect. The Pretest group performed significantly better on the knowledge posttest and checked less don't know answers than the posttest only group. The utility index indicated that less than 2% of the total variability was accounted for by the Testing condition.

There was no significant interaction effect found between the Media by Testing conditions.

Implications

The results of the study has implications: (a) for understanding what other student groups know about the General Physical Education Program, (b) for planning further publicity programs, and (c) for

further media research projects dealing with publicizing physical education programs.

Selected References

Barr, A. J., Goodnight, J. H., Sall, J. P., & Helwig, J. T. User's Guide to the SAS 76. Raleigh, N. C.: SAS Institute Inc., 1976.

Campbell, D. T. & Stanley, J. C. Experimental and Quasi-Experimental Designs For Research. Chicago: Rand McNally College Publishing Company, 1973.

Gronlund, Norman E. Preparing Criterion-Referenced Tests for Classroom Instruction. New York: Macmillian Company, 1973.

Harris, R. J. A Primer of Multivariate Statistics. New York: Academic Press, 1975.

National Association for Sport and Physical Education. Standards For The General College Physical Education, Journal of Health, Physical Education and Recreation, 1975, 24-28.

Winer, B. J. Statistical Principles in Experimental Designs. New York: McGraw-Hill Book Company, 1971.